State of Washington
DEPARTMENT OF FISH AND WILDLIFE
Mailing Address: 600 Capitol Way N Olympia, WA 98501-1091 (360) 902-2222, TDD (360) 902-2207
Main Office Location: Natural Resources Building 1111 Washington Street SE Olympia, WA

April 3, 2007

Ad hoc Stakeholder Respondents

Subject: Response to comments - Statewide Steelhead Management Plan

The Washington Department of Fish and Wildlife's (Department) Statewide Steelhead Management Plan DRAFT was released for comment on December 22, 2006 with a follow-up Ad hoc stakeholder meeting on January 9, 2007 to review and receive preliminary input on the contents of the document. Subsequent to the meeting, several written comments were received by the Department as well. Many comments were insightful, constructive and formed the basis for a number of revisions or clarifications within the Department's revised DRAFT (Attachment A). In addition, although the Department received a number of written comments, consistent themes became evident. Thus the Department has opted to respond to the comments through a single letter organized by the themes within the stakeholder comments.

Wild, Natural, Native or Locally Adapted Steelhead
Stakeholders, tribes, local entities, and other state and federal agencies use a variety of terms to describe steelhead stocks relative to their origin within the context of a watershed. Furthermore, stakeholders and staff used several terms to describe steelhead stocks during the meetings. The lack of a consistent and clear definition often resulted in confusion and debates regarding the intent of the Department's policies, strategies, and actions. Clarifying the Department's definition is crucial for evaluating how steelhead will be conserved and managed. Rebuilding criteria for some of the currently federally listed ESA populations represents the underpinning for the Department's decision to use the term "wild"; defined as "naturally produced fish from a locally adapted stock regardless of origin or parentage". Further definitions for "wild fish" and "wild-origin" can be located in 'Definitions' of the statewide steelhead management plan on page 35.

Long term goal for rebuilding and conserving Washington's steelhead
A long-term goal is crucial in defining the scope of the Department's management actions, and thus establishes a benchmark from which management can be assessed. Several comments suggested four main alternatives for a long-term goal:

1) Historical abundance levels extending beyond those currently described in the 'steelhead science paper':

   a. Use cannery pack data or other anecdotal information prior to European settlement
   b. Establish long-term abundance goals greater than current level
2) MSH-based goals (maximum sustainable harvest):
   a. Fishery management driven goal
   b. Based on stock recruitment information
   c. Successful when habitat and stock are at healthy levels.
3) Technical recovery teams (TRT) use Viable Salmonid Population (VSP) characteristics (McElhany et al. 2000):
   a. VSP represents characteristics of a population that collective define the depth and breathe of health and productivity to withstand natural perturbations within its life history
   b. Characteristics include abundance (number of fish), productivity (ability to replace itself), diversity (variation among), and spatial structure (physical distribution)
4) Healthy and harvestable goals for steelhead stocks:
   a. Consistent with federal ESA recovery plans for listed populations
   b. Based on 'Properly Functioning Conditions' (PFC) for habitat
   c. Co-manager recovery goals for Puget Sound Chinook derived from PFC, expressed as a range of spawners at MSH to replacement level

Considering the state's population growth, the commensurate required infrastructure and the condition of the habitat currently throughout the state, recovering steelhead to historical abundances is an impractical goal. However, recognition that pre-settlement abundances were likely much higher than initially estimated will influence the selection of both intermediate and long-term goals for steelhead.

Maximum sustainable harvest goals are insufficient to meet the rebuilding rates required to increase abundance, diversity and spatial structure of populations throughout the state, even though MSH goals are sufficient when populations are at abundances that achieve density dependent parameters.

Viable Salmonid Population represents metrics to assess a long-term goal because it describes measurable characteristics of a population, but in and of itself fails to capture fisheries in relation to a stock as well as adequately define numerical values. Thus MSH is fishery management biased, while VSP is population biased. Some combination of the two captures the conservation and sustainable fishery goals of the Department.

Thus, the Department chose a long-term goal based on the concept of "healthy and harvestable" stocks utilizing the concept of VSP as a metric for population health, and developing numerical values similar in principle to those developed by the Department and Puget Sound Tribes and TRT analyses of Columbia Basin stocks.

The department will place the highest priority on the protection of wild steelhead stocks and the restoration of these stocks to healthy and harvestable levels. See 'Goals and Policies' as well as the 'Natural Production Policy Statement' on pages 3 & 5, respectively, of the steelhead statewide plan; see page 5 as well for the definition of a healthy stock. The Department acknowledges the policy for wild steelhead management framed by the definition of healthy will be difficult to achieve, and nearly impossible without substantial habitat improvements; for stocks with low abundance, an interim escapement objective must be established that builds stock abundance in lieu of an escapement goal based on MSH.

Escapement Goals

Prior to federal ESA listings, escapement goals for salmonids were based on fixed values to produce the MSH. Today, escapement goals and objectives for salmonids are a mixed bag, reflecting de-listing criteria, inclusion of VSP characteristics, PFC for habitat, and harvest rates that ultimately provide for increasing escapement in the absence of explicit changes in escapement goals. MSH spawner escapement goals were established for most Washington steelhead stocks in the early 1980s. De-listing criteria have been established for the majority of ESA-listed stocks in the Columbia River basin with consideration of VSP characteristics that are consistent with a 5% risk of extinction over a 100-year time frame. WDFW provided recovery goals derived from PFC of aquatic habitat for the Lower Columbia steelhead ESU.

Several comments suggested three main alternatives:

1) MSH-based escapement goals, which are consistent with existing tribal agreements and definable by stock-recruit functions
2) Escapement goals greater than MSH to assure VSP achieved, extinction risk is lowered, and to avoid negative feedback in stock productivity associated with insufficient inputs of marine-derived nutrients
3) Maximum Sustained Recreational (MSR) opportunity, a variation of alternative 2, manages for recreational fishing opportunities, implemented through catch and release fisheries, rather than MSH which is implicit with harvest.

The Department has chosen an approach that identifies achievement of escapement objectives as a higher priority than fishing opportunity. This approach will be prioritized based upon stock status to include alternative escapement objectives that will provide increasing numbers of adults as habitat is restored. It will also include VSP characteristics to maximize the rebuilding and plasticity of the population over time. MSH may still be used on stocks of high abundance with good habitat. Where a fixed escapement goal is not appropriate, interim objectives will be used to increase spawning in order to move towards escapement goal. This decision is further reflected in the 'Natural Production' chapter, Strategies, page 5, with strategy 2 "Provide Sufficient Spawners" and page 6, strategy 4 "Describe Path with Measurable Benchmarks to Long-term Goals". In 'Natural Production', Strategy 2c, page 5, further describes the departments goals and states that for healthy steelhead stocks, the escapement policy will be to provide at least, if not more than, the number of wild spawners necessary to achieve MSH. For SaSI Depressed, Critical or ESA-listed stocks,

significant work will be required to establish an interim escapement goal that provides for rebuilding. Furthermore, fisheries may become more restrictive, especially on stocks with "Unknown" status, while some tribes may disagree with an escapement alternative to MSH. Additional funding and staffing will be required to increase precision in stock assessment.

Early-timed component of steelhead stocks
Stakeholders and some historic data suggests the early-timed component of some winter steelhead stocks has been diminished in abundance because of relatively high harvest rates targeting hatchery origin steelhead during the early portion of the run. In addition, interbreeding between non-local hatchery steelhead and early timed wild steelhead has also been cited as a risk. Managing escapements inclusive of VSP characteristics will help restore the diversity and spatial structure of steelhead, both within and among stocks, and will be essential to assuring long-term viability.

Further detail on this approach can be found in the 'Natural Production' chapter, Strategy 1, page 5. More information can also be found in the 'Fishery Management' chapter, Strategy 1 and Actions 2 & 3 on pages 11-12. Evaluation of the potential selective effects of fisheries on run-timing of wild stocks will require substantial staff time, including assessment of the incidental mortality during fisheries directed at hatchery-origin fish. Reductions in early-season fisheries, changes in release sites for Chambers Creek type steelhead, or both may be required to protect and restore the early run-timing component of some steelhead stocks. Steelhead management shall place the highest priority on the protection of wild steelhead stocks and restoration of these stocks ('Natural Production', Policy Statement, page 5).

Management of under-escaped steelhead stocks
Stakeholders provided the following alternatives for fishery management actions when abundance of returning adults was less than the escapement objective:

1) Close all fisheries including those that incidentally impact the stock
2) Allow only incidental impacts on fisheries directed at other species
3) Open fisheries if the abundance of hatchery-origin adults exceeds broodstock requirements, but require the release of all unmarked steelhead
4) Limit mortalities in all fisheries to either 10% or, for ESA-listed species, the fishery permit limit

The Department will assess and manage steelhead fisheries based on total fishing-related mortality for all non-tribal fisheries, though some uncertainty exists in the mortality of unmarked fish released, especially as it relates to long-term survival. Until further studies refine precision, the Department will apply a 10% hook and release mortality rate to steelhead as a risk containment measure (see 'Fishery Management' chapter, Action 2, page 12). For commercial fisheries, the Department will use a site-specific mortality rate. More information can be found in the 'Fishery Management' chapter, Strategies 1 & 4, page 11-12, as well as Actions 1-10, pages 12-15.

Wild Stock Gene Banks (Wild Fish Management Zones, WFMZs)
Various concepts regarding wild stock management, natural production reserves and/or sanctuaries have been proposed. In general, the consistent concept is to provide a genetic reserve of wild fish to protect the population in the event of a temporary loss of a nearby stock through a catastrophic loss in habitat e.g. eruption of Mt. St. Helens, Elwha Dam breach, landslide; a risk containment measure in the recovery of ESA-listed species; or, as a control for scientific studies assessing the effects of hatchery, harvest, and/or habitat actions. Stakeholders generally support the concept of natural stock reserves (wild steelhead management zones), despite the substantial variation in the influence of hatchery and harvest actions allowed in these areas. Stakeholders provided the following alternatives:

1) Protect and restore habitat in the natural stock reserve; eliminate all hatchery programs and fisheries impacting the stock
2) Eliminate all steelhead hatchery programs and fisheries impacting the stock
3) Eliminate segregated hatchery steelhead programs impacting the stock and allow only catch-and-release fisheries
4) Eliminate only steelhead hatchery programs impacting the stock

The Department chose to focus on the definition and major objective; limit direct and indirect impacts of steelhead hatchery programs. Thus, a network of "wild stock reserves" will be established across the state consistent with the applied definition. One wild stock reserve will be established for each major population group with the following characteristics 1) the area of the wild stock reserve must incorporate the spawning area of the stock, 2) the stock must be sufficiently abundant and productive to be self-sustaining into the future, and 3) have limited direct and indirect influence from hatchery production. For more information on wild stock reserves, see 'Artificial Production' chapter, Strategy 1 on page 16.

Implementation of the wild stock reserves may require substantial modification of some artificial production programs as well as agreement with tribal managers. Analyses and subsequent discussions will be forthcoming with stakeholders and Department staff to identify potential natural stock reserves for steelhead.

Selective Fisheries
A variety of views were expressed regarding the relative emphasis on selective fishing methods in recreational, non-treaty commercial fisheries directed at other species, and treaty fisheries. Selective fisheries, characterized as those that minimize the impact on wild fish (or non-target populations) while attempting to maximize harvest of abundant hatchery origin fish, are a valuable management tool. Stakeholders provided the following alternatives:

1) The Department should advocate the use of selective fishing methods for recreational fisheries and non-treaty commercial fisheries directed at all species
2) The Department should advocate the development of selective fishing methods for recreational and non-treaty commercial fisheries directed at other species

3) The Department should advocate the use of selective fishing methods for recreational fisheries and non-treaty commercial fisheries, as well as treaty fisheries directed at steelhead
4) WDFW should advocate the use of selective fishing methods only for stocks returning at abundance levels less than the escapement objective

The Department will promote the use of selective fisheries, and expand the selectivity of all non-treaty fisheries (see 'Fishery Management' chapter, Strategy 2, page 11).

Habitat
Stakeholders expressed the need for a habitat chapter and challenged the Department to address steelhead habitat issues. Although the DRAFT Statewide Steelhead Plan is not a species recovery plan, the Department has included a habitat chapter in order to address current initiatives, the Department's leadership role, and foster the application of VSP for steelhead habitat issues. The Agency's Habitat Program has been instrumental in developing the science foundation for habitat in the Steelhead Science Paper, as well as the habitat chapter of the DRAFT Statewide Plan. For more information on this issue see 'Habitat Protection and Restoration' chapter, page 8.

Goals and benchmarks for restoration and conservation
Stakeholders expressed the need for the Department to establish short- and long-term goals for restoration and conservation of wild steelhead populations to provide more timely and informed decision making to long-term rebuilding. The DRAFT Statewide Steelhead Plan requires each region to describe a path to short-term and long-term goals (see 'Natural Production', Strategy 4, page 6). The Department also chose to establish these goals in fisheries management (see 'Fishery Management', Strategy 5, page 12) and in artificial production (see 'Artificial Production' chapter, Strategy 5, page 16) since each will play a pivotal role in the overall restoration and conservation of wild steelhead.

Implementation of integrated hatchery steelhead programs
Stakeholders expressed general opposition to the widespread development and use of integrated hatchery programs, particularly in the Puget Sound region. However, a risk analysis showed an integrated program to be more beneficial than a segregated program, if the integrated program included a sunset provision, with a clearly defined monitoring plan, then it could potentially be considered.

The Department has provided a description of acceptable segregated and integrated artificial production programs in the 'Artificial Production' chapter, Strategy 5, pages 16-17. The Department requires regions to evaluate the current benefits and risks of artificial production programs within the context of the individual watershed plans through a "viability stressors" table. Further detail will be provided in the individual watershed plans.

Protection and management of resident *O. mykiss* populations

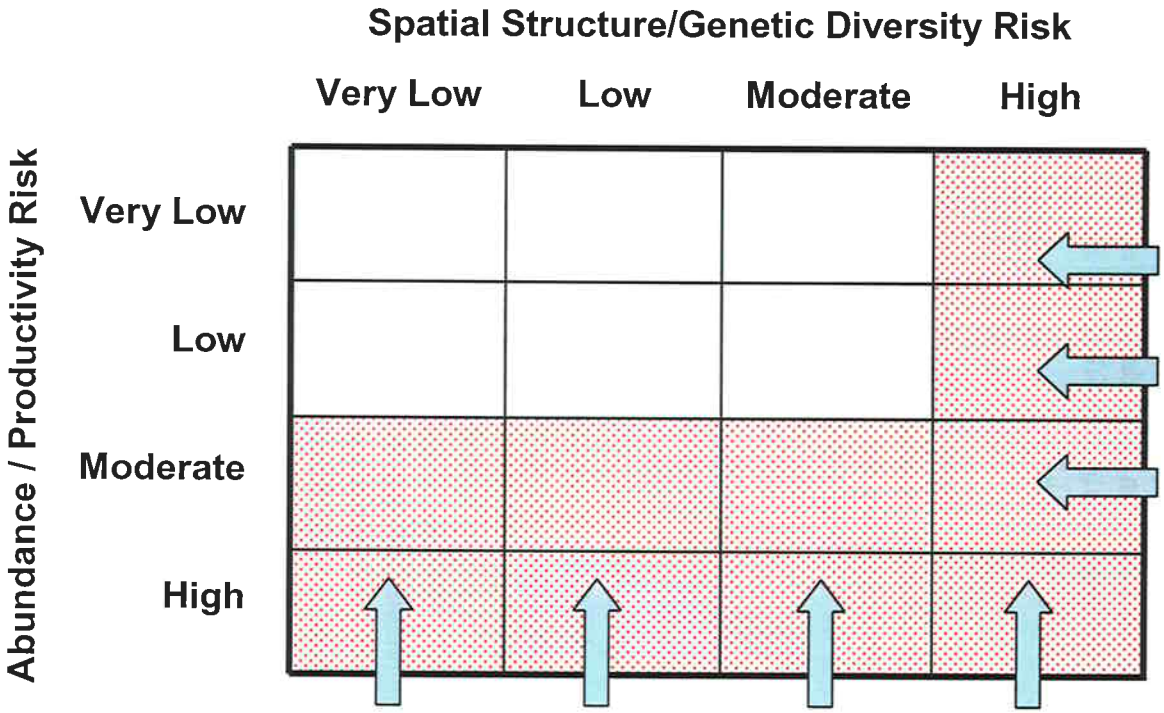
Anadromy is not obligatory in *O. mykiss*. Progeny of anadromous steelhead can spend their entire life in freshwater, while progeny of rainbow trout can migrate seaward. Anadromy is both environmentally and genetically linked. It is difficult to summarize one life history strategy (anadromy) without due recognition of the other (resident). The two strategies co-mingle on some continuum with certain residency at one end, and certain anadromy on the other.

Many stakeholders expressed a desire to have the Department address a vital component of steelhead life history particularly in regard to protection of resident trout populations and hybridization with anadromous populations. Managing from an ecosystem perspective (see 'Artificial Production' chapter, Strategy 4, page 16) will allow natural dynamics to occur. To support native trout management, the Department will discontinue the release of hatchery-origin rainbow trout in rivers, streams and lakes that would result in a significant negative impact to steelhead (see 'Artificial Production, Action 1, page 17). In addition, the Department will prioritize research (see 'Research' chapter, Strategy 1, page 26) and promote interest in steelhead research on the contribution of resident rainbow trout to anadromous steelhead populations ('Research' chapter, Strategy 4, page 26) and build on current studies in the Cedar and Yakima rivers to develop a better understanding of the relationship of resident and anadromous O. Mykiss ('Research' chapter, Action 7, page 27).

Address sources of wild steelhead mortalities
Stakeholders requested the Department expand mortality estimates to include all sources e.g. hook and line release, net-drop out, poaching, etc. Limited information currently exists to accurately quantify the various sources of mortality. However, the Department will prioritize research (see 'Research' chapter, Strategy 1, page 26) to expand and increase precision for fishery related mortality associated with catch-and-release fisheries, through mark and recapture or tagging studies as well as expand enforcement efforts and outreach and education programs to address poaching issues ('Research', Action 1, page 26).

VSP analysis for wild steelhead populations
VSP criteria will be used to assist in developing interim escapement objectives to rebuild wild steelhead populations. However, we should be clear that greater risk might be taken with some characteristics of VSP in order to secure significant benefits in another characteristic. For example, spatial structure and diversity can add plasticity to the overall stock, but if abundance and productivity are so low that genetic changes occur (e.g. inbreeding depression) then the stock improvement does not occur. Thus, in some situations, abundance and productivity may be prioritized in order to build stocks to a level that diversity and spatial structure can be optimized. Furthermore, it will be difficult for stocks to move diagonally up through the blocks (Figure 1), and in practice stair stepping upwards will be the likely outcome. For more information see 'Goals and Policies', page 3 and 'Natural Production' chapter, definition of a healthy stock, page 5.

Figure 1. Example of VSP and actions that can reduce risk to characteristics (NOAA Fisheries 2006).



- Hatchery programs preserve a population until the factors limiting recovery are addressed.
- Manage the proportion of hatchery origin fish spawning naturally (*p*HOS).
- Reduce the influence of *p*HOS that depresses natural origin productivity (straying from Segregated Hatchery Programs).
- Improve juvenile and adult fish passage or reestablish access to underutilized habitat.
- Restore or improve habitat quality
- Adjust harvest timing and/or broodstock collection timing to reflect historical run timing.
- Establish natural stock reserves.

- Hatchery programs preserve a population until the factors limiting recovery are addressed.
- Offspring from naturally spawning HOF jump-start naturally self-sustaining populations after the factors limiting recovery are addressed.
- Reduce the influence of *p*HOS that depresses natural origin productivity (straying from Segregated Hatchery Programs).
- Reduce the number of NOF killed or injured by hatchery water diversions.
- Freshwater nutrient levels increase due to fish carcasses (all anadromous species).
- Reduce hatchery origin predation on and competition with natural origin fish through release timing and release location measures.

Monitoring, Adaptive Management and Regulatory Compliance
The Department recognizes the importance of establishing clear and measurable goals for the steelhead stocks, and key to long-term success will be the development of intermediate goals since many years are required to rebuild the stocks to more productive and abundance levels. This in turn requires monitoring so that we know how quickly, directly, and efficiently we are moving towards achieving our goals.

The DRAFT Statewide Steelhead Management Plan establishes a framework to develop monitoring and evaluation plans that will support adaptive management (see 'Monitoring, Evaluation, and Adaptive Management' chapter, Policy Statement, page 22). The strategy establishes a feedback loop to implement and evaluate appropriate actions to support progress towards achieving the identified goals ('Monitoring, Evaluation, and Adaptive Management, Strategy 3, page 22). Status of all steelhead populations will be reassessed on 4 to 8 year cycles; with annual review of at risk populations to ensure opportunities for early action are not missed (Actions 10 & 11, Stock Status, pages 23-24). Annual reports for natural production will be developed and include spawner distribution, habitat utilization through mapping, and subsequent natural smolt production and migration (Habitat Monitoring, Action 17, page 24). Annual recreational and tribal harvest reports will be available (Fishery Management, Actions 12 & 13, page 24). A number of artificial production programs will have commensurate hatchery monitoring and evaluation plans, inclusive of broodstock management to determine if strategies are achieving the identified program goals as well as summarize every five years the hatchery replacement rate to support adaptive management (Artificial Production, Actions 22 and 23, page 24). Every five years a regional report that compiles and summarizes the above pieces will be written and provided to the Director and Fish and Wildlife Commission articulating the results and progress towards wild production goals (Verification and Accountability, Action 25, page 24).

Increased monitoring and reporting of fisheries readily expands to regulatory compliance. Increased emphasis on regulatory compliance will also extend to a greater level of enforcement affecting habitat (see 'Regulatory Compliance' chapter, Strategies 1-5, Actions 1-9, pages 20-21).

Salmonid Stock Inventory (SaSI)
Based upon a common response from stakeholders, it was clear that the Department needed to update the SaSI database to reflect current data on steelhead stocks, and prioritize data needs to address the "Unknown" stocks, as well as clarify the definition of "Healthy" to be linked with the definition provided in the DRAFT Steelhead Statewide Management Plan. The Department has made a commitment to update SaSI stock information (see 'Monitoring, Evaluation, and Adaptive Management' chapter, Action 10, page 23), and developed a budget package for the 2007-09 biennial period to increase stock assessment in Puget Sound to resolve some of the 'Unknown' stock status'. The biennial package was not funded, however, the Department remains committed to seeking the state funds necessary to determine stock status of Puget Sound

'Unknowns'. In addition, the SaSI definition of "Healthy" will be updated to more accurately reflect the definition of healthy included in the DRAFT Steelhead Statewide Plan as well as numerous regional recovery plans.

Stakeholder involvement has been key to the development of the current DRAFT Statewide Steelhead Management Plan. The Department is aware this process has been laborious, time consuming, and even frustrating for our stakeholders. However, we also believe the final product will more accurately reflect stakeholder values and management principles from a scientific foundation than many other documents the Department has written to date.

The Department has greatly valued your time, feedback, and assistance in developing a management plan that will be successful in all aspects of protecting and restoring steelhead populations statewide. Thank you for your continued participation and support. You have been a vital part of the development of the statewide steelhead management plan process.

Sincerely,

Heather Bartlett
Salmon and Steelhead Division Manager

Cc: Phil Anderson
Lew Atkins
Craig Burley
John Easterbrooks
Pat Frazier
Bob Gibbons
Bill Gill
Sara LaBorde
Bob Leland
John Long
Joe Miller
Jim Scott
Jo Wadsworth
Ron Warren
John Whalen
Amilee Wilson